CLAIMS

1. A method of manufacturing an optical fiber preform, comprising the steps of:

subjecting a starting pipe to an inside vapor phase deposition so that a glass layer to be formed into a core and a glass layer to be formed into a part of a cladding are deposited inside the starting pipe, the glass layers each containing at least one of fluorine, germanium, phosphorous, and chlorine, the starting pipe being made of silica glass and having an outside diameter in the range of 20 mm to 150 mm and a wall thickness in the range of 2 mm to 8 mm, and thereby forming a pipe having a glass layer to be formed into a core; and

collapsing said pipe so as to form a glass rod in which the concentration of OH groups is 10 weight ppm or less in a region from the surface of the glass rod to a depth of 1 mm therefrom.

2. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the concentration of hydroxyl groups is 1 weight ppm or less.

3. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the starting pipe is a pipe made of a silica glass containing fluorine.

4. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the starting pipe is formed by depositing fine glass particles, followed by dehydration and consolidation, and the concentration of hydroxyl groups present in the starting pipe is 0.01 weight ppm or less.

5. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the unevenness of a wall thickness of the starting pipe is 0.3% or less over the entire length thereof.

6. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein, the non-circularities of the inside diameter and the outside diameter of the starting pipe are each 1 percent or less.

7. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the inside vapor phase deposition method is an MCVD method, and the deposition rate of depositing the glass layer is 0.4 g/min or more.

8. The method of manufacturing an optical fiber preform, according to Claim 7,

wherein the deposition rate is 1.0 g/min or more.

9. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the total thickness of the glass layer to be formed into a core and the glass layer to be formed into a part of a cladding is 1 mm or more, and the wall thickness of the pipe having the glass layer to be formed into a core is

8 mm or less.

10. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the core non-circularity of the glass rod is 0.4% or less, and the number of bubbles on the central axis of the glass rod is one or less per 10 mm length.

11. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the non-circularity of a part of the glass rod which is deposited by the inside vapor phase deposition method is 1.5% or less, and the number of bubbles on the central axis of the glass rod is one or less per 10 mm length.

12. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein the collapsing comprises a first heating step in which one end of the pipe having the glass layer to be formed into a core is heated and collapsed and a second heating step in which the pipe having the glass layer to be formed into a core is heated and collapsed from the one end to the other end, and a surface temperature T1 of the one end in the first heating step is higher than a surface temperature T2 of the heated part of the pipe in the second heating step, the pipe having the glass layer to be formed into a core.

13. The method of manufacturing an optical fiber preform, according to Claim 7,

wherein a heat source for the MCVD method is one of an induction

furnace, a resistance furnace, and a plasma torch.

14. The method of manufacturing an optical fiber preform, according to Claim 1,

wherein a heat source for the collapsing is one of an induction furnace, a resistance furnace, and a plasma torch.

15. A method of manufacturing an optical fiber, comprising the step of drawing the optical fiber preform manufactured by the manufacturing method according to Claim 1.

16. The method of manufacturing an optical fiber, according to Claim 15,

wherein, in said step of drawing, the glass rod is inserted into a jacket pipe, and the glass rod and the jacket pipe are drawn while they are being unified together by heating.

17. The method of manufacturing an optical fiber, according to Claim 16,

wherein the jacket pipe is formed by depositing fine glass particles, followed by dehydration and consolidation, and the concentration of hydroxyl groups present in the jacket pipe is 0.01 weight ppm or less.

18. An optical fiber manufactured by the manufacturing method according to Claim 15.

19. The optical fiber according to Claim 18,

wherein the polarization mode dispersion is 0.15 ps/km$^{1/2}$ or less.

20. The optical fiber according to Claim 18,

wherein the absorption loss caused by hydroxyl groups at a wavelength of 1.38 μm is 0.2 dB/km or less.